CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 1st to 15th January, 2016

Latitude : $13^0 58^1$ N **Longitude : 78^0 E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
January 1st to 15th, 2016	28.3 **(27.5)**	15.1 **(15.9)**	73.2 **(74.8)**	44.8 **(48.2)**	3.6 **(4.1)**	2.1 **(3.9)**	0.0 **(0.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th January, 2016

During the first fortnight of the month i.e., from January 1st to 15th, 2016, the average maximum and the average minimum temperatures were lower by 0.5^{O}C and 2.4^{O}C respectively, as compared to the previous fortnight. The average maximum temperature value was higher by 0.5^{O}C and the average minimum temperature value was lower by 0.8^{O}C, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 5.1 % and 6.7 %, as compared to the previous fortnight. There was no rainfall recorded during the fortnight.

Crop weather situation

- There was no rainfall during the last fortnight. Wind speed and evaporation were lesser than the previous averages. Split application of Nitrogen and potassium fertilizers to kharif planted banana may be given. Similarly low temperatures might have caused deficiency of micro nutrients in banana and other fruit crops. Micro nutrient sprays may be given to these crops and also to rabi vegetables.
- Fruit was noticed in some of the early varieties of mango viz., Lazzat Baksh.
- Early flowering in some collections of jamun was observed.
- Due to morning dew followed by more sunshine, resulted in alternaria infection in coloured grape varieties.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers on mango

- Incidence of hoppers is expected on mango. Spray Azadirachtin 10000 ppm @ 3 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.3 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle

emergence. This will also take care of thrips. Addition of sticker is essential. Avoid spraying on full bloom to protect pollinators.

- For organic orchards, application of entomopathogen *Metarhizium anisopliae* formulation @ 5ml/l is recommended.

Flower webbers/inflorescence caterpillars on mango

- Besides hoppers, inflorescence caterpillars which web the flowers and feed inside are potential pests on mango during January. Application of lambda cyhalothrin @ 0.5ml/l or cypermethrin @1ml/l are useful to control the pest.

Banana skipper

- Skipper butterfly is becoming is serious pest on banana. Larva rolls the leaves and feeds by remaining inside. Affected leaves to be mechanically removed and destroyed. In case of severe infestation, spraying of quinolphos @ 2ml/l or chlorpyriphos @c 2.5ml/l is advised.

Onion thrips

- Both on bulb and seed crops, thrips are expected to increase with ensuing rise in temperatures. Spraying with imidacloprid (0.3ml/l) or fipronil (1ml/l) would be effective.

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *Ha*NPV @ 250 LE/ha during evening hours or spray indoxacarb @ 1ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam @ 0.3 g/l for their management.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid @ 0.5 ml/l for their management.

Diseases

Fruit crops

Anthracnose and powdery mildew in grapes

- Anthracnose and powdery mildew (*Uncinulanecator*) infection may be noticed in grapes. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) whereas for powdery mildew Application of Azoxytrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended forthe management of disease.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/l.

Sigatoka leaf spot, crown rot and anthracnose in banana

- Sigatoka leaf spot (*Mycospheralla* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodiatheobromae*) and anthracnose (*Colletotrichummusae*) Macrophoma fruit spot disease needs proper attention in banana. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown

rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

- Application of Hexaconazole + Zineb (0.2%) may be effective in case of complex infection of diseases as mentioned above.

Powdery mildew in mango

- Powdery mildew requires attention in mango. At this point of time application of wettable suphuris not advisable because of high temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Leaf and fruit spot disease in pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercosporapunicae*and anthracnose of fruit and leaf (*C. gloeosporioides)* may increase further in pomegranate. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Black spot and powdery mildew in papaya

- Infection of Black spot (*Asperisporiumcaricae*) may further increase in papaya. Whereas powdery mildew (*Oidiumcaricae*) infection may also be noticed. Application of Chlorothalonil (0.2%) Carbendazim (0.1%). Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

- **Powdery mildew** incidence will be high in all vegetables (solaceous and cucurbitaceous). If temperature is not high wettable sulphur can be given. If temperature increases spraying of wettable sulphur should be avoided. Hexaconazole at 0.1% along with sticker 0.5ml/ l will be effective in controlling the powdery mildews in vegetables.
- **Anthacnose** in vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Ornamental crops

- **Powdery mildews** in rose and gerbera. Spraying azoxystrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. In not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 16th to 31st January, 2016

Latitude : $13^0 58^1$ N **Longitude : 78^0 E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
January 16th to 31st, 2016	27.2 **(28.4)**	15.5 **(14.8)**	81.8 **(74.1)**	46.3 **(43.3)**	2.7 **(4.7)**	2.4 **(4.4)**	0 **(0.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st January, 2016

During the second fortnight of the month i.e., from January 16th to 31st, 2016, the average maximum temperature was lower by 1.1^{O}C and the average minimum temperature was higher by 0.4^{O}C as compared to the previous fortnight. The average maximum temperature value was lower by 1.2^{O}C and the average minimum temperature value was higher by 0.7^{O}C as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 8.6% and 1.5% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- Due to increasing day temperature, incidence of mealy bugs was noticed in Sharad Seedless grapevines.
- Fruit set was noticed in certain varieties of mango viz., Alphonso, Totapuri and Chandrakaran.
- There was no rainfall during this fortnight also. Vegetable seedlings grown in nursery for summer season may be provided with good irrigation and covered with straw mulch to conserve moisture. Those vegetable crops which have already been transplanted may also be given good irrigation. For better growth and development of nursery enriched compost with bio fertilizers and VAM (Vesicular Arbuscular Mycorrhiza) may be used.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers on mango

- Incidence of hoppers is expected on mango. Spray Azadirachtin 10000 ppm @ 3 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.3 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle

emergence. This will also take care of thrips. Addition of sticker is essential. Avoid spraying on full bloom to protect pollinators.

- For organic orchards, application of entomopathogen *Metarhizium anisopliae* formulation @ 5ml/l is recommended.

Flower webbers/inflorescence caterpillars on mango

- Besides hoppers, inflorescence caterpillars which web the flowers and feed inside are potential pests on mango during January. Application of lambda cyhalothrin @ 0.5ml/l or cypermethrin @1ml/l are useful to control the pest.

Banana skipper

- Skipper butterfly is becoming is serious pest on banana. Larva rolls the leaves and feeds by remaining inside. Affected leaves to be mechanically removed and destroyed. In case of severe infestation, spraying of quinolphos @ 2ml/l or chlorpyriphos @c 2.5ml/l is advised.

Onion thrips

- Both on bulb and seed crops, thrips are expected to increase with ensuing rise in temperatures. Spraying with imidacloprid (0.3ml/l) or fipronil (1ml/l) would be effective.

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *Ha*NPV @ 250 LE/ha during evening hours or spray indoxacarb @ 1ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam @ 0.3 g/l for their management.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid @ 0.5 ml/l for their management.

Diseases

Fruit crops

- Anthracnose and Powdery mildew (*Uncinula necator*) infection may be noticed in grapes. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) whereas for powdery mildew Application of Azoxytrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l may be used for the management of disease. Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

- Powdery mildew requires attentionin mango. At this point of time application of wettable sulphur is not advisable because of increase in temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

- In pomegranate, intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides)* may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

- Infection of Black spot (*Asperisporium caricae*) may further increase in papaya. Whereas powdery mildew (*Oidium caricae*) infection may also be noticed. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

- **Powdery mildew** incidence will be high in all vegetables (solaceous and cucurbitaceous). If temperature is not high wettable sulphur can be given. If temperature increases spraying of wettable sulphur should be avoided. Hexaconazole at 0.1% along with sticker 0.5ml/ l will be effective in controlling the powdery mildews in vegetables.

- **Anthacnose** in vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Ornamental crops

- **Powdery mildews** in rose and gerbera. Spraying azoxystrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. In not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
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Period: 1st to 15th February, 2016

Latitude : $13^0 58^1$ N **Longitude : 78^0 E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
February 1st to 15th, 2016	31.6 **(28.7)**	18.5 **(14.7)**	76.0 **(69.7)**	45.4 **(49.7)**	4.4 **(4.9)**	2.7 **(5.2)**	0.0 **(0.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th February, 2016

During the first fortnight of the month i.e., from February 1st to 15th, 2016, the average maximum and the average minimum temperatures were higher by 4.4^{O}C and 3.0^{O}C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 2.9^{O}C and 3.8^{O}C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 5.8 % and 0.9 %, as compared to the previous fortnight. There was no rainfall recorded during the fortnight.

Crop weather situation

- Average maximum and minimum temperatures during this period are quite higher than average values of previous 5 years. All the rabi vegetables which are in the field may be given protective irrigations for better growth. Mulching may also be done to reduce evaporation and conserve moisture. Due to dry weather, availability of nutrients like K and micronutrients might have been reduced. Foliar spray of micro nutrients may be given to rabi vegetables as well as fruit crops like banana and papaya.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers on mango

- On mango, incidence of hoppers may continue wherever flowering is delayed. Spray azadirachtin @ 3ml/L. If the incidence is severe, spray imidacloprid @ 0.3 ml/L. This will also take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures. Lamda cyhalothrin (0.5ml/L) may be applied, if flower webbers are noticed.

Mango stone weevil management

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of deltamethrin @ 1ml/L is recommended.

Fruit fly Management in mango

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6-8/acre. Collect and destroy fallen fruits.

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l

Mites on tomato

- For the management of mites on tomato, spray dicofol @ 2.5 ml/l

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Mealy bugs on grapes:

- Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Thrips on rose

- For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on Rose

- During the period, severe incidence of mites is observed on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

Fruit crops

- In grapes, anthracnose and powdery mildew (*Uncinulanecator*) infection may be noticed. For anthracnose application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%),/ Carbendzim + Mancozeb (0.2%) /Bitertanol (0.2%) whereas for powdery mildew application of Azoxytrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.

- Powdery mildew requires attention in mango. At this point of time application of wettable sulphur is not advisable because of high temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l.

Vegetable crops

- Powdery mildew incidence will be high in all vegetables (solaceous and cucurbitaceous). If temperature is not high wettable sulphur can be given. If temperature increases spraying of wettable sulphur should be avoided. Hexaconazole at 0.1% along with sticker 0.5ml/ l will be effective in controlling the powdery mildews in vegetables.

- Anthacnose in vegetables will increase especially in chillies. For anthracnose application of Difenoconazole (0.05%) / Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Ornamental crops

- Powdery mildews in rose and gerbera. Spraying azoxystrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. In not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.

Virus diseases

- Change in weather especially increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

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Period: 16th to 29th February, 2016

Latitude : $13^0 58^1$ N **Longitude : 78^0 E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
February 16th to 29th, 2016	33.0 **(29.9)**	19.5 **(16.1)**	74.6 **(65.2)**	51.5 **(43.8)**	5.0 **(5.1)**	3.7 **(4.7)**	0 **(0.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 29th February, 2016

During the second fortnight of the month i.e., from February 16th to 29th, 2016, the average maximum and the average minimum temperatures were higher by 1.4^{O}C and 1.0^{O}C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 3.1^{O}C and 3.4^{O}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning hours was lower by 1.4% and during afternoon hours was higher by 6.1% as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- As the temperatures during last fortnight are far higher than the average value for the last five years, frequent protective irrigations must be given to all horticultural crops including fruit crops, vegetable crops and flower crops. Mulching in vegetable crops is essential to reduce evaporation loses.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango Hoppers

- On mango, incidence of hoppers may continue wherever flowering is delayed. Spray Azadirachtin @ 3ml/L. or Thiamethoxam @ 0.3 g/L. This will also be helpful in checking the thrips.

Mango stone weevil management

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of Deltamethrin @ 1ml/L will be effective and will take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly Management

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6/acre is recommended. Collect and destroy fallen fruits.

Mealy bugs on grapes

- Incidence of mealybugs may increase during this period. Spray Dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray Triazophos @ 1.5 ml/l

Mites on tomato

- For the management of mites on tomato, spray Dicofol @ 2.5 ml/l

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray Imidacloprid @ 0.5 ml/l.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray Rynaxypyr @ 0.3 ml/l.

Thrips on rose

- For the management of thrips on rose, spray Acephate 1g/l or Imidacloprid @ 0.5 ml/l.

Diseases

Fruit crops

- Infection of anthracnose and powdery mildew may be noticed in grapes. For anthracnose management application of Difenoconazole (0.05%) / Thiophanate methyl (0.1%), / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%), whereas for powdery mildew, application of Azoxytrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease. Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

- Powdery mildew requires attention in mango. At this point of time application of wettable sulphur is not advisable because of high temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Vegetable crops

- Anthacnose in vegetables will increase especially in chillies. For anthracnose, application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

CROP WEATHER SITUATION
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Period: 1st to 15th March, 2016

Latitude : $13^0 58^1$ N **Longitude : 78^0 E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
March 1st to 15th, 2016	34.4 **(30.9)**	20.0 **(17.9)**	72.6 **(67.1)**	44.8 **(41.4)**	5.6 **(5.7)**	3.0 **(5.7)**	0.0 **(4.8)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th March, 2016

During the first fortnight of the month i.e., from March 1st to 15th, 2016, the average maximum and the average minimum temperatures were higher by 1.4^{O}C and 0.5^{O}C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 3.5^{O}C and 2.1^{O}C respectively, as compared to the values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 2.0 % and 6.7 % respectively, as compared to the previous fortnight. There was no rainfall recorded during the fortnight.

Crop weather situation

- The temperatures are very high and humidity is also more. These conditions are conducive for incidence of many insect pests and diseases. There may be high fruit drop in mango, 0.1 % Boric acid spray may help reduce this fruit drop. Frequent irrigations also may be given to summer vegetables as there was no rainfall at all.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango hoppers

- On mango, incidence of hoppers may continue wherever flowering is delayed. Spray azadirachtin @ 3ml/L. or thiamethoxam @ 0.3 g/L. This will also be helpful in checking the thrips.

Mango stone weevil management

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of deltamethrin @ 1ml/L will be effective and will take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly management in mango

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6/acre. Collect and destroy fallen fruits.

Mealy bugs on grapes

- Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l

Mites on tomato

- For the management of mites on tomato, spray dicofol @ 2.5 ml/l

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Thrips on rose

- For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Diseases

Fruit crops

- In grapes, anthracnose and powdery mildew (*Uncinulanecator*) infection may be noticed. For anthracnose application of Difenoconazole (0.05%) / Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%) whereas for powdery mildew application of Azoxytrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.

- Powdery mildew requires attention in mango. At this point of time application of wettable sulphur is not advisable because of high temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Vegetable crops

- Anthacnose in vegetables will increase especially in chillies. For anthracnose, application of Difenoconazole (0.05%) / Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 16th to 31st March, 2016

Latitude : $13^0 58^1$ N **Longitude : 78^0 E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
March 16th to 31st, 2016	36.5 **(32.8)**	22.9 **(18.0)**	66.3 **(69.1)**	41.8 **(37.0)**	6.2 **(7.0)**	2.9 **(4.9)**	0.0 **(0.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st March, 2016

During the second fortnight of the month i.e., from March 16th to 31st, 2016, the average maximum and the average minimum temperatures were higher by 2.1^{O}C and 2.9^{O}C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were higher by 3.7^{O}C and 4.9^{O}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 6.3% and 3.0% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- Day temperatures are much higher compared to average values of previous 5 years. Regular supplemental irrigations are very much required to safeguard summer vegetables and other fruit crops like banana and papaya. Straw mulching may be provided to reduce evaporation losses as well as to reduce ambient temperatures.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango stone weevil management

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of acephate @ 1.5g/L followed after two weeks by deltamethrin @ 1ml/L. This will also take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly Management in mango

- Collect and destroy fallen fruits. In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6/acre.

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l

Mites on tomato and Ridge gourd

- Rising temperatures favour mite multiplication. For the management of mites on tomato and ridge gourd, spray spiromesifen 22.9SC @ 0.5ml/L or fenazaquin 1.5ml/L at fortnight interval.

Serpentine leaf miner on cucurbits

- Spray neem soap @10g/L mixed with cypermethrin (1ml/L)

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l or Spiromesifen 22.9SC @ 0.5ml/L. Do not repeat the same chemical.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Mealy bugs on grapes

- Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Thrips on rose

- For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on Rose

- During the period, severe incidence of mites is observed on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

Fruit crops

- Infection of anthracnose and powdery mildew may be noticed in grapes. For anthracnose management application of Difenoconazole (0.05%) / Thiophanate methyl (0.1%), / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%), whereas for powdery mildew, application of Azoxytrobin (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease. Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

- Powdery mildew requires attention in mango. At this point of time application of wettable sulphur is not advisable because of high temperature. Anthracnose spots might further increase on foliage. Application of Mancozeb + Dinocap (Dikar) (0.3%) or Tridemorph (0.1%) or Hexaconazole (0.1%) is recommended for the disease management. Severity of Anthracnose spots might increase. Application of Difenoconazole (0.05%) or Thiophanate

methyl (0.1%) is recommended along with sticker @ 0.5 ml/ l. Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Vegetable crops

- Anthacnose in vegetables will increase especially in chillies. For anthracnose, application of Difenoconazole (0.05%)/ Thiophanate methyl (0.1%) / Carbendzim + Mancozeb (0.2%) / Bitertanol (0.2%) along with sticker 0.5ml/l will be effective.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 1st to 15th April, 2016

Latitude : $13^0 7^1$ N **Longitude : $72^0 29^1$E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
April 1st to 15th , 2016	37.3 **(32.3)**	24.3 **(19.8)**	73.4 **(67.8)**	43.9 **(41.6)**	6.2 **(6.5)**	3.2 **(4.9)**	0.0 **(7.5)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th April, 2016

During the first fortnight of the month i.e., from April 1st to 15th, 2016, the average maximum and the average minimum temperatures were higher by 0.8^{0}C and 1.4^{0}C respectively, as compared to the previous fortnight. The average maximum temperature was lower by 0.5^{0}C while the average minimum temperature was higher by 1.8^{0}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 7.1% and 2.1% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- The maximum and minimum temperatures are more by 5 to 6^{0}C than the average daily temperatures of last 5 years. Because of high temperatures crops are getting affected in terms of vegetative growth, fruit production and quality in vegetables as well as fruit crops. Nutrient uptake is also affected due to high temperatures. Vegetable special may be sprayed on vegetable crops. Similarly for banana, Banana special may be sprayed. Frequent protective irrigations are necessary for vegetables.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions
Under the prevailing weather situation, the following pests are expected under Bangalore conditions. Various pest management options are also mentioned below.

Mango stone weevil management: Wherever fruits reached lemon size (2-4 cm diameter), a spray of acephate @ 1.5g/L followed after two weeks by deltamethrin @ 1ml/L. This will also take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly Management:
- Collect and destroy fallen fruits.

- In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6/acre.

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l

Mites on tomato and Ridge gourd

- Rising temperatures favour mite multiplication. For the management of mites on tomato and ridge gourd , spray spiromesifen 22.9SC @ 0.5ml/L or fenazaquin 1.5ml/L at fortnight interval.

Serpentine leaf miner on cucurbits

- Spray neem soap @10g/L mixed with cypermethrin (1ml/L)

Whiteflies on tomato:

- Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l or Spiromesifen 22.9SC @ 0.5ml/L. Do not repeat the same chemical.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Mealy bugs on grapes:

- Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Thrips on rose

- For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on Rose

- During the period, severe incidence of mites is observed on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

Fruit Crops

- **Mango:** Anthracnose (*C.gloeosporioides*) and stem end rot (*L. theobromae*) are expected to infect mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Azoxystrobin (0.1%) should be applied keeping in view of time of harvest (PHI).
- **Pomegranate:** Application of COC (0.2%) + Streptocycline (300 ppm) along with the sticker @ 0.5ml/l should be applied immediately with even little showers. Due to no rains the disease is not spreading, however sparying needs to done where ever rainfall occur.
- **Papaya:** Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Ornamentals

- Leaf spots in rose and gerbera. Spraying trifloxistrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. If not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Dry spells followed by intermittent rains and high temperature favour vector populations. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population in vegetables. For perennial crops acephate spray at 0.2% will reduce vectors

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 16th to 30th April, 2016

Latitude : $13^{0}7^{1}$ N **Longitude : $72^{0}29^{1}$E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
April 16th to 30th, 2016	37.8 **(31.9)**	23.6 **(19.7)**	69.9 **(73.7)**	43.2 **(42.3)**	6.0 **(5.9)**	4.1 **(4.8)**	0.0 **(32.5)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th April, 2016

During the second fortnight of the month i.e., from April 16th to 30th, 2016, the average maximum temperature was higher by 0.5^{O}C, whereas the average minimum temperature was lower by 0.7^{O}C respectively, as compared to the previous fortnight. The average maximum temperature and the average minimum temperature values were lower by 0.4^{O}C and 0.1^{O}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 3.5% and 0.7% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- Intense drop of mango fruits of lime size and above in many varieties especially Langra and Totapuri.
- Color development in many of the Bangalore Blue grape vineyards was a serious problem due to excess temperature. Due to higher day and night temperature and less humidity, back pruning was delayed anticipating less sprouting percent of buds in all the varieties.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango stone weevil management

- Wherever fruits reached lemon size (2-4 cm diameter), a spray of acephate @ 1.5g/L followed after two weeks by deltamethrin @ 1ml/L. This will also take care of thrips incidence on fruits which is becoming serious in some parts with rising temperatures.

Fruit fly Management in mango

- Collect and destroy fallen fruits. In orchards where fruit set occurred early and they attained full size, erect methyl eugenol based fruit fly traps @ 6/acre.

Leaf miner on tomato

- Incidence of leaf miner is observed on tomato. For its management spray triazophos @ 1.5 ml/l

Mites on tomato and Ridge gourd

- Rising temperatures favour mite multiplication. For the management of mites on tomato and ridge gourd, spray spiromesifen 22.9SC @ 0.5ml/L or fenazaquin 1.5ml/L at fortnight interval.

Serpentine leaf miner on cucurbits

- Spray neem soap @10g/L mixed with cypermethrin (1ml/L)

Whiteflies on tomato

- Incidence of whiteflies is noticed on tomato. For their management spray imidacloprid @ 0.5 ml/l or Spiromesifen 22.9SC @ 0.5ml/L. Do not repeat the same chemical.

Brinjal shoot and fruit borer

- For the management of brinjal shoot and fruit borer, spray rynaxypyr @ 0.3 ml/l.

Mealy bugs on grapes

- Incidence of mealybugs may increase during this period. Spray dichlorvos 76 EC @ 2 ml/l and repeat the spray after 2 weeks. Waiting period of 15 days is to be followed for harvest of the grapes.

Thrips on rose

- For the management of thrips on rose, spray acephate 1g/l or imidacloprid @ 0.5 ml/l.

Mites on Rose

- During the period, severe incidence of mites is observed on roses grown under polyhouse conditions. Spray abamectin @ 0.5 ml/l for their management.

Diseases

Fruit crops

- **Grape:** Grapevines should be protected against the infection of downy mildew by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly.
- **Mango:** Anthracnose (*C.gloeosporioides*) and stem end rot (*L. theobromae*) are expected to infect mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Azoxystrobin (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended.
- **Pomegranate:** Nodal Blight needs further attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

- **Papaya:** Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Virus diseases

- Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Dry spells followed by intermittent rains and high temperature favour vector populations. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population in vegetables. For perennial crops acephate spray at 0.2% will reduce vectors

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 1st to 15th May, 2016

Latitude : $13^0 7^1$ N **Longitude : $72^0 29^1$E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
May 1st to 15th , 2016	37.0 **(31.9)**	23.5 **(19.8)**	69.0 **(72.8)**	36.9 **(43.6)**	5.9 **(5.7)**	3.3 **(4.5)**	12.9 **(57.3)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th May, 2016

During the first fortnight of the month i.e., from May 1st to 15th, 2016, the average maximum and the average minimum temperatures were lower by 0.8^{O}C and 0.1^{O}C respectively, as compared to the previous fortnight. The average maximum temperature remains the same, while the average minimum temperature was higher by 0.1^{O}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were lower by 0.9% and 6.3% respectively, as compared to the previous fortnight. There was 12.9 mm rainfall during the fortnight.

Crop weather situation

- The average minimum and maximum temperatures are higher by 4 to 5^{0}C than the 5 years average values. The rainfall received during this period was very less. Field preparation and application of manures and basal dose of fertilizers may be taken up for planting kharif vegetables and fruit crops like banana.
- Shriveled fruits were observed in Kokum (*Garcinia indica*) , a western ghat plant grown under Bengaluru condition due to prolonged dry spell.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing conditions, the following pests are expected under Bangalore condition. Expected pests and their management are presented below.

Mango fruit fly, *Bactrocera dorsalis*

- As the fruits had attained maturity stage, incidence of fruit fly is expected. For its management following management measures are suggested.

Management:

- Install methyl eugenol traps @ 6 /acre. Traps can be procured from IIHR or KVKs or firms licenced to manufacture IIHR traps.

- Collection and destruction of fallen fruits
- Bait splash on tree trunks with 10% jiggery solution mixed with deltamethrin
- Community approach at village level is recommended for the effective management of this pest

Grapes Flea Beetle: Incidence of flea beetle is expected on newly pruned vines.

Management

- Remove all loose bark
- Rake the soil in basin to expose grubs and pupae to sunlight and mechanical injury
- At early bud sprout –spray of imidacloprid @ 0.3ml/L or Lambda-cyhlothrin @ 0.5ml/L

Grape thrips: On newly pruned grapes, thrips infestation on leaves is expected.

Management:

- Spray Metarhizium anisopliae formulation @ 2ml/L two times at weekly interval or fipronil @ 1ml/L twice at fortnightly interval.

Brinjal shoot and fruit borer, *Leucinodes orbonalis*
Management :

- Release of *Trichogramma chilonis* @ 75,000 per week (for four weeks), if the incidence is moderate.
- Install pheromones traps in the field
- If the incidence is very severe, spray with rynaxypyr @ 0.3 ml/l

Two spotted spider mite, *Tetranychus urticae* on rose
Management :

- Spray abametin @ 0.5 ml/l under polyhouse coditions

Thrips, *Scirtothrips dorsalis* on chilli:

- Incidence of thrips may increase on chilli and capsicum. For its management, spray fipronil @ 1.5 ml/l alternating with imidacloprid @ 0.5 ml/l at fortnightly interval if the crop is at early stage of infestation. Addition of 2 ml of neem oil or pongamia oil per every liter of insecicide spray solution enhances the efficacy of the chemicals against the pest.

Diseases

Fruit crops

- **Mango:** Anthracnose (C.gloeosporioides) and stem end rot (L. theobromae) are expected to infect mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Azoxystrobin (0.1%) should be applied keeping in view of time of harvest (PHI).
- **Papaya:** Aphid population needs to be under check by spraying systemic insecticides whenever there is sudden rise in the population (imidacloprid 3ml per Litre or acephate 0.2%).

Vegetables

- In the nurseries use of bioagents is recommended to reduce the inoculum of Phytophthora, Pythium, Fusarium etc in the roots which will cause major problem later in main field after transplanting.

Ornamentals

- Leaf spots in rose and gerbera. Spraying trifloxistrobin at 0.1% along with sticker 0.5ml/l will help in reducing powdery mildew spread under protected cultivation. If not spread extensively tebuconazole or hexaconazole at 0.1% with sticker also will help.

Virus diseases

- With few rains followed by dry weather rise in the vector population is expected. Change in weather especially low humidity with increase in temperature favours sucking pests which are vectors of many virus diseases. Dry spells followed by intermittent rains and high temperature favour vector populations. Seed treatment with imidacloprid or spray of acephate (0.2%) will be effective in controlling vector population in vegetables. For perennial crops acephate spray at 0.2% will reduce vectors

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 16th to 31st May, 2016

Latitude : $13^0 7^1$ N **Longitude : $72^0 29^1$E** **Altitude : 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
May 16th to 31st, 2016	34.5 **(31.5)**	21.3 **(20.0)**	75.2 **(76.4)**	38.6 **(46.1)**	4.8 **(5.4)**	4.7 **(5.0)**	81.0 **(95.1)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st May, 2016

During the second fortnight of the month i.e., from May 16th to 31st, 2016, the average maximum and the average minimum temperatures were lower by 2.5^{O}C and 2.2^{O}C respectively, as compared to the previous fortnight. The average maximum temperature was higher by 3.0^{0}C, while the average minimum temperature was higher by 1.3^{O}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and afternoon hours were higher by 6.2% and 1.7% respectively, as compared to the previous fortnight. There was 81.0 mm rainfall during the fortnight.

Crop weather situation

- The average minimum and maximum temperatures are still higher than the 5 years average values. Last fortnight average rainfall was good compared to the last fortnight. The vegetable crops which are in the field will be benefitted by this rain. Application of manures and basal dose of fertilizers may be completed. The excess water if any in the basins of papaya may be drained off to prevent wilting and root rot problems.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing conditions, the following pests are expected under Bangalore condition. The pest incidence will be similar to the one in last fortnight. Expected pests and their management are presented below.

Mango fruit fly, *Bactrocera dorsalis*
As the mango fruits are in mature stage, fruit fly incidence is expected to increase across the varieties. For its management following management measures are suggested.
Management:

- Installation of methyl eugenol traps @ 6 /acre. Traps can be procured from IIHR, Bangalore or KVKs

- Collection and destruction of fallen fruits
- Community approach at village level is recommended for the effective management of this pest

Brinjal shoot and fruit borer, *Leucinodes orbonalis*
Management :

- Release of *Trichogramma chilonis* @ 75,000 per week (for four weeks), if the incidence is moderate.
- Install pheromones traps in the field
- If the incidence is very severe, spray with rynaxypyr @ 0.3 ml/l

Two spotted spider mite, *Tetranychus urticae* on rose
Management :

- Spray abametin @ 0.5 ml/l under polyhouse conditions

Thrips, *Scirtothrips dorsalis* on chilli
Incidence of thrips may increase on chilli and capsicum.
Management:

- Spray fipronil @ 1.5 ml/l alternating with imidacloprid @ 0.5 ml/l at fortnightly interval if the crop is at early stage of infestation. Addition of 2 ml of neem oil or *Pongamia* oil per every liter of insecticide spray solution enhances the efficacy of the chemicals against the pest.

Disease scenario

Fruit crops

- **Mango:** Anthracnose (*C. gloeosporioides*) and stem end rot (*L. theobromae*) occur in mango fruits during ripening. Pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended.

- **Grape:** Grapevines should be continued to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l.

- **Pomegranate:** Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
  Nodal Blight needs further attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

- **Banana:** Low incidence of Sigatoka (*Mycospheralla* sp) and other leaf spots needs attention. The disease can be managed by the application of with Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%) whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the

pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

- **Papaya:** Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

- **Guava:** Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides)* should be taken acre. For the disease management application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ along with sticker (0.5 ml /l) should be followed.

Vegetable Crops

- **Tomato**: To prevent the early leaf blight disease free seedlings are to be used. Seed treatment with captan or thiram (3g per kg of seeds) or seedling dip with copper oxy chloride (0.3%) also protects plants from various soil borne pathogens. It is the time for the protective sprays of contact fungicides like mancozeb, copper oxychloride or chlorothalanil on tomato to avoid early leaf blight. In case of serious spread due to rain splash follow up spray with propineb (0.2%) or meitiram (0.2%) or pyraclostrobin + metiram (0.2%) at fortnightly interval.

- **Onion:** To avoid the purple blotch and Stemphyllum leaf blight application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease will be useful

- **Cucurbits:** To avoid the spread of downy mildew spraying Chlorothalonil (0.2%)or Mancozeb(0.2%) or Metalaxyl -Mancozeb(0.2%) or Fosetyl-AI (0.2%) or Cymoxanil-mancozeb(0.2%) lO-day intervals from onset of the disease.

Viral diseases

- To avoid the spread of viral diseases in **tomato** and **chilli**, spray insecticides like Monocrotophos (0.15%), Acephate (0.15%) or Hostothion (0.1 %) at fortnightly intervals after transplanting till flowering stage.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 1st to 15th June, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
June 1st to 15th, 2016	32.4 **(30.2)**	20.5 **(19.7)**	78.2 **(75.3)**	36.0 **(52.6)**	5.4 **(4.9)**	3.5 **(6.9)**	61.5 **(42.2)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th June, 2016

During the first fortnight of the month i.e., from June 1st to 15th, 2016, the average maximum and the average minimum temperatures were lower by 2.1^{O}C and 0.8^{O}C respectively, as compared to the previous fortnight. The average maximum temperature was lower by 1.3^{0}C, while the average minimum temperature was lower by 0.3^{O}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning was lower by 1.1^{O}C and afternoon hours was higher by 6.5% respectively, as compared to the previous fortnight. There was 61.5 mm rainfall during the fortnight.

Crop weather situation

- As sufficient rainfall was recorded during last fort night, the field preparation can be completed for kharif crops wherever it is still not done. Wherever fields are ready, basal dose of FYM and N,P,K fertilization can be done for vegetables as well as fruit crops. Proper staking may be given for standing banana crop as a protection against heavy rains.
- Mealy bug and anthracnose mildew has been noticed in custard apple cv. Arka Sahan
- Early fruit maturity for harvest by 10 to 15 days in most mango varieties during this year.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Different management options for their management are mentioned below.

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh hewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. In case of severe infestation IIHR developed Sealer cum healer formulation can be applied to the stem. Affected tree trunks can be wrapped with nylon mesh to trap the emerging beetles.

Fruit fly on cucurbits

- For the management of fruit fly (*Bactrocera cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil (1 ml/l) or lamda cyhalothrin 5 EC (0.75 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.
- Mix acephate 1g/l mixed with 2 ml of pongamia oil and 1 ml sticker and make an emulsion (add a little water and shake thoroughly in a bottle) and make the volume to 1 lt and spray.

Root-knot nematode in tomato

- Raise healthy transplants on soil mixed with Neem cake @ 50kg + *Trichoderma harzianum* @ 1kg + *Paecilomyces lilacinus* @ 1kg /ton of soil.
- Apply 2 kg of Farm yard manure enriched with bio-pesticides –*T. harzianum* and *P. lilacinus* at the time of planting.

Whitefly on Gerbera (polyhouses)

- Spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l.
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray acephate 75 SP @ 1.5 g/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray acephate @ 1.5 g/l or imidacloprid @ 0.5 ml/l.

Disease scenario

Fruit Crops

- **Mango:** Anthracnose (*C. gloeosporioides*) and stem end rot (*L. theobromae* and *P. mangiferae*) are common in mango fruits during ripening. Pre-harvest sprays with

Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post-harvest treatments with Hot water (52°C) for ten minutes is recommended.

- **Grape:** Grapevines should be continued to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l.
- **Papaya:** Infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may further increase. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.
- **Pomegranate**: Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control. Nodal Blight needs further attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.
- **Guava:** Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides)* should be taken acre. For the disease management application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ along with sticker (0.5 ml /l) should be followed.

Vegetable Crops

- In cucurbits it is time to monitor the downy mildews. Continuous rain and warm weather favour the disease. Spray of metalaxyl at 0.2% will reduce the spread. In tomato with the onset of monsoon the spread of buck eye spot damage on fruits may occur. This can be prevented by spray of copper oxy chloride at 3g/l and in severe cases spray with fenamidon + mancozeb at 0.2% will reduce the disease incidence. In chillies the leaf curl will spread further. Suitable insecticides to be applied to control the insect vectors.

Ornamental Crops

- The black spot of rose can be managed by spray with trifloxystrobin + tebuconazole at 0.1% at 15 days interval. For the downy mildews spray with metalaxyl + mancozeb at 0.2% will help.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 16th to 30th June, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
June 16th to 30th, 2016	29.2 **(29.7)**	19.4 **(20.1)**	82.8 **(73.0)**	44.0 **(50.7)**	2.7 **(4.4)**	6.4 **(7.8)**	68.9 **(12.6)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th June, 2016

During the second fortnight of the month i.e., from June 16th to 30th, 2016, the average maximum and the average minimum temperatures were lower by 3.2^{O}C and 1.1^{O}C respectively, as compared to the previous fortnight. The average maximum temperature was lower by 0.5^{0}C, while the average minimum temperature was higher by 0.4^{O}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning was higher by 4.6% and afternoon hours was higher by 8% respectively, as compared to the previous fortnight. There was 68.9 mm rainfall during the fortnight.

Crop weather situation

- Last fortnight very good amount of rainfall was received. All the field preparation operations can be completed wherever kharif planting of fruits and vegetables is planned. Green manure crops may be raised to improve the soil fertility if late kharif or rabi planting is planned. Basal application or split application of nutrients may be given for fruit crops wherever it is required.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Different management options for their management are mentioned below.

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh hewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. In case

of severe infestation IIHR developed Sealer cum healer can be used. Affected tree trunks can be wrapped with nylon mesh to trap the emerging beetles.

Fruit fly on cucurbits

- For the management of fruit fly (*Bactrocera cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray acephate 75 SP @ 1.5 g/l or fipronil (1 ml/l) or lamda cyhalothrin 5 EC (0.75 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.
- Mix acephate 1g/l mixed with 2 ml of pongamia oil and 1 ml sticker and make an emulsion (add a little water and shake thoroughly in a bottle) and make the volume to 1 lt and spray.

Root-knot nematode in tomato

- Raise healthy transplants on soil mixed with Neem cake @ 50kg + *Trichoderma harzianum* @ 1kg + *Paecilomyces lilacinus* @ 1kg /ton of soil.
- Apply 2 kg of Farm yard manure enriched with bio-pesticides –*T. harzianum* and *P. lilacinus* at the time of planting

Whitefly on Gerbera (polyhouses)

- Spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l.
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray acephate 75 SP @ 1.5 g/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray acephate @ 1.5 g/l or imidacloprid @ 0.5 ml/l.

Disease scenario

Fruit Crops

Grape

- Grapevines should be continued to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l. (iii) Rust (on var Bangalore blue): treatment with Chlorothanonil (0.2%) or Bitertanol (0.2%).

Banana

- Moderate increase in the intensity of Sigatoka leaf spot (*Mycospheralla* sp) was noticed compared with the last fortnight whereas anthracnose of fruits (*C. musae*) and crown rot caused by *Fusarium moniliformae* were recorded. For controlling Sigatoka application of Dinocap (0.1%) or Chlorothalonil (0.2%) is recommended whereas crown rot and anthracnose could be effectively managed by the pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention. Application of Chlorothanonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
- Nodal Blight needs continuous attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Papaya

- Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable Crops

Tomato

- It is the time for the protective sprays of contact fungicides like mancozeb, copper oxychloride or chlorothalanil on tomato to avoid early leaf blight. In case of serious spread due to rain splash follow up spray with propineb (0.2%) or meitiram (0.2%) or pyraclostrobin + metiram (0.2%) at fortnightly interval.

Onion

- To avoid the purple blotch and *Stemphyllum* leaf blight application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease will be useful

Cucurbits

- To avoid the spread of downy mildew spraying Chlorothalonil (0.2%)or Mancozeb(0.2%) or Metalaxyl -Mancozeb(0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb(0.2%) lO-day intervals from onset of the disease.

Viral diseases in tomato and chilli

- To avoid the spread of viral diseases spraying insecticides like Monocrotophos (0.15%), or Hostothion (0.1 %) at fortnightly intervals after transplanting till flowering stage.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA, BANGALORE – 560 089

Period: 1st to 15th July, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
July 1st to 15th, 2016	29.2 **(28.1)**	20.4 **(20.2)**	77.0 **(76.8)**	51.2 **(54.5)**	3.4 **(3.9)**	8.6 **(7.1)**	3.8 **(57.8)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th July, 2016

During the first fortnight of the month i.e., from July 1st to 15th, 2016, the average maximum temperature remains the same while the average minimum temperatures was higher by 1.0^{O}C respectively, as compared to the previous fortnight. The average maximum temperature was lower by 1.6^{0}C, while the average minimum temperature was higher by 0.1^{O}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during both morning and afternoon hours was higher by 3.8% respectively, as compared to the previous fortnight. There was 3.8 mm rainfall during the fortnight.

Crop weather situation

- The average daily temperatures are slightly higher than the average temperature values of previous five years. Whereas average rainfall received during first fortnight was very low compared to previous five years average. The soil conditions are quite conducive for intercultural operations. Foliar spray of Nitrogen, Potassium, Zinc and Boron may be given to standing fruit crops, wherever deficiency of these elements is seen.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, Batocera rufomaculata. Plug active holes (can be diagnosed with the presence of fresh hewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. In case of severe infestation IIHR developed Sealer cum healer can be used.

Fruit fly on cucurbits

- For the management of fruit fly (Bactrocera cucurbitae) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or imidacloprid 200 SL (0.3 ml/l) alternately at fortnightly interval.

Cut worms

- Incidence of cutworms may be seen up to 15-20 days after transplantation of vegetable crops
- Young seedlings will be cut at ground level by cut worm larvae during night time
- Drench the soil around the root zone of the crop with Chlorpyrifos 20 EC @ 5ml/l for killing larvae in the soil

Legumes pod borer

- Spray indoxacarb14.5 SC @ 0.75ml/litre at 10 days interval from flowering stage

Root-knot nematode in tomato

- Raise healthy transplants on soil mixed with Neem cake @ 50kg + Trichoderma harzianum @ 1kg + Paecilomyces lilacinus @ 1kg /ton of soil.
- Apply 2 kg of Farm yard manure enriched with bio-pesticides –T. harzianum and P. lilacinus at the time of planting

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran @ 1 g/l followed by dinetofuran 1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray acephate 75 SP @ 1.5 g/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray acephate @ 1.5 g/l or imidacloprid @ 0.5 ml/l.

Disease scenario

Fruit Crops:

Grape

- Grapevines needs to be protected against the infection of (i) downy mildew: by the application of 0.4g Dimethomorph + 2.00 g Mancozeb /l or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly (ii) anthracnose: spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective along with sticker @ 0.5 ml/ l. (iii) Rust (on var Bangalore Blue): treatment with Chlorothanonil (0.2%) or Bitertanol (0.2%).

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides*) needs attention. Application of Chlorothanonil (0.2%) /Propineb (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.
- Fresh Bacterial blight infection can be seen due to rains. That requires continuous attention. Application of COC (0.2%) + Streptocycline (300 ppm) /l along with the sticker @ 0.5ml/l should be applied at the interval of 15 – 20 days.

Papaya

- Foliar, fruit as well as internal infection of Anthracnose (*C. gloeosporioides*), Black spot (*Asperisporium caricae*) may advance. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Sapota

- There was no appreciable change in the intensity of leaf spot (*P. indicia*) disease compared with last fortnight. Application of Zineb (0.3%) or Ziride (0.4%) along with sticker (0.5 ml /l) are recommended for their management.

Vegetable Crops

Tomato

- Foliar application of copper oxychloride (0.3%) or Chlorothalonil (0.2%) or Mancozeb (0.2%) or Propineb (0.2%) or Metiram (O.2%) or Pyraclostrobin + metiram (0.2%) at fortnightly interval will reduce the spread of early leaf blight of tomato caused by Alternaria species. To prevent the late blight caused by Phytophthora infestans spraying of Mancozeb (0.2%) or Copper oxychloride (0.3%), Copper hydroxide(0.2%) or Fosetyl-Al (0.2%) or Pre-packed mixture of Metalaxyl+Mancozeb (0.2%) may be carried out that may reduce the risk of serious infection expected in the later part of the season. Spraying of acephate at .01% or imidacloprid at 0.03% will reduce the tospovirus infection spread by thrips.

Chillies and capsicum

- To prevent the leaf blight by *Phytophthora capsici* spraying of Mancozeb (0.2%) or Copper oxychloride (0.3%), Copper hydroxide(0.2%) or Fosetyl-Al (0.2%) or Pre-packed mixture of MetalaxylMancozeb (0.2%) may be carried out that may reduce the risk of serious infection expected in the later part of the season. Spray of insecticides like Monocrotophos (0.15%), Acephate (0.15%) or Hostothion (0.1 %) at fortnightly intervals

after transplanting, until the flowering stage will reduce vector transmitted viral diseases incidence.

Onion

- Application of fungicides such as Chlorothalonil (0.2 %) or Propineb (0.2 %) or Mancozeb (0.2%) at fortnightly intervals from onset of the disease may reduce the purple blotch or Stemphylium leaf blight.

Cucurbits

- Spraying of Chlorothalonil (0.2%)or Mancozeb(0.2%) or Metalaxyl -Mancozeb(0.2%) or Fosetyl-AI (0.2%) or Cymoxanil- mancozeb(0.2%) lO-day intervals from onset of downy mildew will reduce the damage.

Ornamental Crops

Rose

- To avoid the black spot in rose prophylactic spray with contact fungicides will help (chlorothalonil or mancozeb at 0.2%) along with sticker. If severe cases trifloxystrobin+tebuconazole at 0.1% at 15 days interval will reduce the disease incidence.

Marigold

- To avoid the spread of Alternaria blight prophylactic spray with copper oxy chloride, chlorothalonil or mancozeb at 0.2% at 15 days interval will help.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 16th to 31st July, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
July 16th to 31st, 2016	29.2 **(28.6)**	20.6 **(20.0)**	79.0 **(77.5)**	48.7 **(51.9)**	3.3 **(3.7)**	4.2 **(8.5)**	170.4 **(40.1)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st July, 2016

During the second fortnight of the month i.e., from July 16th to 31st, 2016, the average maximum temperature remains the same while the average minimum temperatures was higher by 0.2^{O}C respectively, as compared to the previous fortnight. The average maximum temperature was higher by 0.5^{0}C, while the average minimum temperature was lower by 0.2^{O}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning was higher by 0.7% whereas during afternoon hours it was lower by 2.6% respectively, as compared to the previous fortnight. There was 170.4 mm rainfall during the fortnight.

Crop weather situation

- The rainfall is deficit by more than one hundred mm. Even though sowing is done, crop growth is poor. Farmers are advised to give life-saving irrigations wherever available. Whatever mulch material is available must be used to cover the soil surface to prevent evaporation. Avoid application of nitrogenous fertilizer till it rains or irrigated.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are as below.

Mango stem borer

- This period coincides with the emergence of adult beetles of trunk borer, *Batocera rufomaculata*. Plug active holes (can be diagnosed with the presence of fresh hewed wood material and excreta) with cotton dipped in dichlorovos @ 5ml/L and close with mud. In case of severe infestation IIHR developed Sealer cum healer can be used.

Fruit fly on cucurbits

- For the management of fruit fly (*Bactrocera cucurbitae*) on cucurbits, following integrated approach may be followed. Installing cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or imidacloprid 17.8 SL (0.3 ml/l) alternately at fortnightly interval.

Cut worms

- Incidence of cutworms may be seen up to 15-20 days after transplantation of vegetable crops.
- Young seedlings will be cut at ground level by cut worm larvae during night time.
- Drench the soil around the root zone of the crop with Chlorpyrifos 20 EC @ 5ml/l for killing larvae in the soil.

Legumes pod borer

- Spray indoxacarb14.5 SC @ 0.75ml/litre at 10 days interval from flowering stage.

Root-knot nematode in Tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @2kg /ton of FYM..
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m^2. This can also be mixed with water and applied as soil drench @ 2l/$m^{2.}$. The same can be thoroughly filtered and sent along with drip or sprayed.

Root-knot nematode in Okra

- Seed treatment with *Trichoderma harzianum* or Pseudomonas fluorescens @ 15-20g/kg seed.
- Soil application of FYM or vermicompost @5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @2kg /ton of FYM..
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m^2. This can also be mixed with water and applied as soil drench @ 2l/$m^{2.}$. The same can be thoroughly filtered and sent along with drip or sprayed.

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran @ 1 g/l followed by dinetofuran 1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Rose Thrips

- Spray imidacloprid 17.8 ml/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Midge on crossandra

- Incidence of midge is increasing on crossandra. For its management spray imidacloprid @ 0.5 ml/l.

Disease scenario

Fruit Crops:

Grape

- Protection against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%). Rust needs to be taken care in grape vine orchards (var Bangalore Blue). It could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly. In white varieties preventive sprays for anthracnose management with difenconazole 0.05% or thiophenate methyl 0.1%.

Mango

- Intensity of Leaf spot (P. mangiferae / C. gloeosporioides) may increase. Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) or Carbendazim + Iprodion (0.2%) along with the sticker @ 0.5ml/L is advisable. Infection of Sooty mould should also be taken care for which application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended.

Papaya

- Black leaf and fruit spots (Asperisporium cariceae) are attaining serious proportions. Application of Thiophanate methyl (0.1%) or Antracol (0.2%) or Carbendazim (0.2%) along with sticker @ 0.5 ml/L are recommended. Lower surface of the leaves to be sprayed properly.

Banana

- Intensity of Sigatoka leaf spot (Mycospheralla sp) may be moderate. For controlling Sigatoka application of Tridemorph (0.1%)/ or Chlorothalonil (0.2%) is recommended. Moderate infection of Leaf (Dieghtonella spp.), and fruit spots (Macrophoma spp.) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas Leaf and fruit spot disease caused by Puedocercospora punicae may become serious These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.

Vegetable Crops:

- Because of intermittent rains spread of Phytophthora blight is expected in tomato, chilli and other crops. For initial stages preventive spray with chlorathalonil (0.2%) and Bourdeaux mixture (1%) will help. In severe conditions where spread is faster spraying with cymoxanil + mancozeb (0.1%) will help. In Solanaceous (tomato, capsicum, chilli) and Cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.), Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 1st to 15th August, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
August 1st to 15th, 2016	28.0 **(28.7)**	21.7 **(20.0)**	76.9 **(76.0)**	57.4 **(54.8)**	4.1 **(3.9)**	6.6 **(6.8)**	0.0 **(50.8)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th August, 2016

During the first fortnight of the month i.e., from August 1st to 15th, 2016, the average maximum was lower by 1.2^{0}C and minimum temperatures was higher by 1.1^{0}C respectively, as compared to the previous fortnight. The average maximum temperature was higher by 0.1^{0}C, while the average minimum temperature remains same, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning was lower by 1.5% whereas during afternoon hours it was higher by 2.9% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- As there was no rainfall at all during last fortnight, protective irrigation may be given to fruits and vegetables as wind speed and evaporation were more. So mulching may be provided to reduce evaporation losses of water. Split dose of fertilizers may be given to banana, papaya and other kharif planted fruits and other horticultural crops.
- The weather data during the fortnight (1st to 15th August, 2016) was suitable for the cultivation of Oyster Mushroom (Pleurotus spp.) and Shiitake mushroom (Lentinula edodes) with additional humidity requirement.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options are mentioned below.

Leaf Webber on mango

- Remove and destroy the webbed portions wherever they are accessible.
- For the management of this pest prune the affected shoots and spray lambda cyhalothrin 5EC @ 1ml/l.

Mango shoot borer

- Clip and destroy affected shoots.
- Spray lambda cyhalothrin 5EC @ 1ml/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, Rhynchaenus mangiferae.

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (deltamethrin 1 ml + jaggery @ 10g/L) at 10 days interval from the date of flowering.
- Bait Splash of 40/ acre (150g jaggery + 500mlwater + 5ml deltamethrin).

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb @ 0.75 ml/litre or spinosad @ 0.3ml/l.

Mites on tomato

- For the management of mites spray wettable sulphur @ 3 g/l or propargite 57 EC @ 1.25 ml/l or fenzaquine @ 1.5ml/litre.

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or imidacloprid 17.8 SL (0.3 ml/l) alternately at fortnightly interval.

Root-knot nematode in tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @5 tons/ha enriched with Trichoderma harzianum @ 2kg + Paecilomyces lilacinus @ 2kg + Pseudomonas fluorescens @2kg /ton of FYM.
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m2. This can also be mixed with water and applied as soil drench @ 2l/m^2. The same can be thoroughly filtered and sent along with drip or sprayed.

Rose Thrips

- Spray imidacloprid 17.8 ml/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Mites on rose

- For the management of mites spray milbemectin @ 1 ml/l.

Midge on crossandra

- Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid @ 0.5 ml/l.

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran @ 1 g/l followed by dinetofuran 1g/litre.
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease scenario

Fruit Crops:

Grape

- Rust infection needs attention on var. Bangalore blue (PDI> 70%) It could be managed with the application of Azoxystrobin (0.1%) or Propiconazole (0.1%) or Chlorothalonil (0.2%) or Bitertanol (0.2%). Lower surface of the leaves on the vines to be sprayed properly. Powdery mildew may infect grapevines for which sprays of Azoxystrobin (0.1%) / Hexaconazole (0.1%) are recommended.

Guava

- Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose *(C. gloeosporioides)* in mature fruits may be occurring. Application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ along with sticker (0.5 ml /l) is recommended for disease control.

Mango

- Leaf spot (*P. mangiferae* /*C. gloeosporioides*) may be noticed on the new flush. Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) or Hexaconazole + Zineb (0.2%) along with the sticker @ 0.5ml/l is advisable.

Papaya

- Black leaf and fruit spots (*Asperisporium cariceae*) may become serious. Application of Thiophanate methyl (0.1%) or Antracol (0.2%) or Carbendazim + Iprodion (0.2%) along with sticker @ 0.5 ml/l are recommended. Lower surface of the leaves to be sprayed properly.

Pomegranate

- Leaf and fruit spot disease caused by *Puedocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides)* may become serious These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.

Sapota

- Moderate intensity of leaf spot (*P. indica*) may be recorded. Spraying Zineb (0.3%) or Ziride (0.4%) along with sticker (0.5 ml /l) will effectively control the disease.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 16th to 31st August, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
August 16th to 31st, 2016	27.0 **(28.4)**	20.6 **(19.6)**	80.6 **(79.2)**	58.1 **(55.0)**	3.0 **(3.9)**	3.9 **(5.0)**	16.5 **(87.2)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st August, 2016

During the second fortnight of the month i.e., from August 16th to 31st, 2016, the average maximum and minimum temperatures were lower by 1.0^{0}C and 1.1^{0}C respectively, as compared to the previous fortnight. The average maximum and minimum temperature were lower by 0.3^{0}C and 0.4^{0}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning was higher by 3.2% whereas during afternoon hours it was higher by 0.2% respectively, as compared to the previous fortnight. There was 16.5mm rainfall during the fortnight.

Crop weather situation

- This fortnight remained very dry without rainy days in most parts of the south interior Karnataka especially in vegetable growing areas. As a result the frequency of irrigation has increased. During this period farmers are advised not to resort to excess application of nitrogenous fertilizers. Wherever possible organic or plastic mulches must be used to prevent loss of water. Farmers may cover tree basins with a layer of cocopeat. This would have the dual benefit of water conservation and also weed control.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. The management options are mentioned below.

Leaf Webber on mango

- Remove and destroy the webbed portions wherever they are accessible
- For the management of this pest prune the affected shoots and spray lambda cyhalothrin 5EC @ 1ml/l

Mango shoot borer

- Clip and destroy affected shoots
- Spray lambda cyhalothrin 5EC @ 1ml/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae*

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 15 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (deltamethrin 1 ml + jaggery @ 10g/L) at 10 days interval from the date of flowering.
- Bait Splash of 40/ acre (150g jaggery + 500mlwater + 5ml deltamethrin)

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre
- Spray indoxacarb @ 0.75 ml/litre or spinosad @ 0.3ml/l

Mites on tomato

- For the management of mites spray wettable sulphur @ 3 g/l or propargite 57 EC @ 1.25 ml/l or fenzaquine @ 1.5ml/litre

Chilli Thrips

- Spray fipronil 5 SC (1.5 ml/l) or Difenthuran 1ml/litre or thiacloprid 240 SC @ 0.5 ml/l alternately at fortnightly interval.

Root-knot nematode in tomato

- Raise healthy transplants on soil applied with FYM or vermicompost @5 tons/ha enriched with *Trichoderma harzianum* @ 2kg + *Paecilomyces lilacinus* @ 2kg + *Pseudomonas fluorescens* @2kg /ton of FYM.
- In standing crop, apply neem cake enriched with above biopesticides @ 50g/ m^2. This can also be mixed with water and applied as soil drench @ 2l/$m^{2.}$. The same can be thoroughly filtered and sent along with drip or sprayed

Rose Thrips

- Spray imidacloprid 17.8 SC @ 0.5ml/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Mites on rose

- For the management of mites spray milbemectin @ 1 ml/l

Midge on crossandra

- Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray Imidacloprid @ 0.5 ml/l.

Whitefly on Gerbera (polyhouses)

- Spray diafenthiuran @ 1 g/l followed by dinetofuran 1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease scenario

Fruit Crops:

Grape

- Protection against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%). Rust needs to be taken care in grape vine orchards (var Bangalore Blue). It could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly. In white varieties preventive sprays for anthracnose management with difenconazole 0.05% or thiophenate methyl 0.1%.

Banana

- Intensity of Sigatoka leaf spot (Mycospheralla sp) may be moderate. For controlling Sigatoka application of Tridemorph (0.1%)/ or Chlorothalonil (0.2%) is recommended. Moderate infection of Leaf (Dieghtonella spp.), and fruit spots (Macrophoma spp.) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas Leaf and fruit spot disease caused by Puedocercospora punicae may become serious These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.
- For bacterial blight spray of Bordeaux mixture 1% along with bronopol or streptocycline at 0.5% at 15 days interval will reduce the spread of the disease.

Vegetables:

- Because of intermittent rains spread of Phytophthora blight is expected in tomato, chilli and other crops. For initial stages preventive spray with chlorathalonil (0.2%) and Bourdeaux mixture (1%) will help. In severe conditions where spread is faster spraying with cymoxanil + mancozeb (0.1%). In solanaceous (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.) Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 1st to 15th September, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
September 1st to 15th, 2016	25.4 **(28.6)**	20.2 **(20.1)**	78.7 **(76.8)**	56.9 **(54.4)**	2.4 **(4.7)**	3.4 **(5.4)**	44.0 **(84.2)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th September, 2016

During the first fortnight of the month i.e., from September 1st to 15th, 2016, the average maximum and minimum temperatures were lower by 1.6^{0}C and 0.4^{0}C respectively, as compared to the previous fortnight. The average maximum and minimum temperature were higher by 0.2^{0}C and 0.5^{0}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and evening were lower by 1.9%, and 1.2% respectively, as compared to the previous fortnight. There was 44.0mm rainfall during the fortnight.

Crop weather situation

- The amount of rainfall received during this fortnight was almost 50 % lower than average value of previous 5 years. Sufficient irrigation for kharif planted banana, papaya and vegetables may be given. Soil conditions are conducive for soil preparation for rabi vegetables. Top dressing of N & K fertilizers and micronutrient sprays may be given wherever deficiency symptoms are seen.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers and thrips on mango

- New flush of certain varieties like Alphonso and Banganapalli attracts hoppers and thrips. Spraying with acephate @ 1.5 g /L along with sticker will check the infestation which otherwise may serve as source for flowering season.

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 15 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (deltamethrin 1 ml + jaggery @ 10g/L) at 10 days interval from the date of flowering.
- Bait Splash of 40/ acre (150g jaggery + 500mlwater + 5ml deltamethrin).

Mites on tomato

- For the management of mites spray wettable sulphur @ 3 g/l or propargite 57 EC @ 1.25 ml/l or fenzaquine @ 1.5ml/litre.

Ash weevil on brinjal

- Collect and destroy adults.
- Apply oiled neem cake with 8-10% oil to ridges @ 250kg/ha at planting and repeat at 30 Days after planting.
- In endemic areas, apply carbofuran 3 G @15 kg/ha on 15 days after planting.
- Spray Cypermethrin 25 EC @ 0.5 ml/litre.

Rose thrips

- Spray imidacloprid 17.8 SL @ 0.5ml/l or dimethoate 30 EC @ 2ml/l with pongamia oil 0.5%.
- Apply Fipronil 5 SC @ 1.5 ml/l in case of severe infestations.
- Drench the soil with Chlorpyrifos 20 EC @ 5ml/l for killing pupae in the soil.

Mites on rose

- For the management of mites spray milbemectin @ 1 ml/l.

Midge on crossandra

- Under the prevailing conditions, incidence of midge increases on crossandra. For its management spray imidacloprid @ 0.5 ml/l.

Whitefly on Gerbera (polyhouse)

- Spray diafenthiuran @ 1 g/l followed by dinetofuran 20 SG@ 1g/litre
- Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Budborer on kakada

- Severe incidence of kakada bud borer is noticed during this period. Spray profenofos 1 ml/l for its management. If the incidence is severe spray indoxacarb @ 0.75 ml/l.

Disease scenario

Fruit Crops:

Grape:

- After forward pruning buds on the grapevines should be protected against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%). Rust needs to be taken care in grape vine orchards (var Bangalore Blue). It could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.
- Lower surface of the leaves on the vines to be sprayed properly.

Mango:

- Intensity of Leaf spot (*P. mangiferae* / *C. gloeosporioides*) may increase. Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) or Carbendazim + Iprodion (0.2%) along with the sticker @ 0.5ml/L advisable. Infection of Sooty mould should also be taken care for which application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended

Papaya:

- Black leaf and fruit spots (*Asperisporium cariceae*) are attaining serious proportions. Application of Thiophanate methyl (0.1%) or Antracol (0.2%) or Carbendazim + Iprodion (0.2%) along with sticker @ 0.5 ml/L are recommended. Lower surface of the leaves to be sprayed properly.

Banana:

- Intensity of Sigatoka leaf spot (*Mycospheralla* sp) may be moderate. For controlling Sigatoka application of Tridemorph (0.1%)/ or Chlorothalonil (0.2%) is recommended. Moderate infection of Leaf (*Dieghtonella* spp.), and fruit spots (*Macrophoma*spp.) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate:

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas Leaf and fruit spot disease caused by *Puedocercospora punicae* may become serious These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.

Vegetable Crops:

In solanaceous (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.)

- Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.
- In places where tomato has been planted late, with incessant rains late blight due to Phytophthora will appear. To prevent spray of copper oxy chloride at 0.2% or Bordeaux mixture 1% is recommended.

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ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 16th to 30th September, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
September 16th to 30th, 2016	25.2 **(29.8)**	21.7 **(20.3)**	80.5 **(79.5)**	54.5 **(51.8)**	2.9 **(4.0)**	4.4 **(4.2)**	14.0 **(74.4)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th September, 2016

During the second fortnight of the month i.e., from September 16th to 30th, 2016, the average maximum temperature was lower by 0.2^{0}C and average minimum temperature was higher by 1.5^{0}C, as compared to the previous fortnight. The average maximum and minimum temperature were higher by 1.2^{0}C and 0.2^{0}C, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning was higher by 0.8% and during evening was lower by 2.4% respectively, as compared to the previous fortnight. There was 14.0mm rainfall during the fortnight.

Crop weather situation

- The weather remained dry without rains. Most of the horticultural crops are facing moisture deficit. As a result farmers are advised to apply available mulches to minimise evaporation losses. Further application of nitrogenus fertilizers may be postphoned or reduced to minimum. A foliar spray of potassium may be given to impart resistance to drought.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango shoot borer

- Clip and destroy affected shoots.
- Spray acephate 50 WP@ 1.5 g/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae.*

Webber and ash weevil on Mango

- Incidence of webber and ash weevil become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos @ 2 ml/l or lamda cyhalothrin @ 1ml /l for their management.

Pomegranate:

Fruit sucking moth

- Wherever matured fruits are there fruit sucking moth damage is expected. Netting the orchards is recommended.

Thrips

- On new flush, thrips incidence is expected. Spray fipronil @ 1.5ml/L.

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Tobacco caterpillar on Tomato

- For the management of this pest, spray indoxacarb @ 0.75 ml/L or thiodicarb @ 1 g/L.

Leaf hopper on okra/Bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 1 %, thoroughly covering lower surface of leaves.

Thrips on rose

- Incidence of rose thrips was observed more under polyhouse conditions. Spray acepthate @ 1 g/l or imidacloprid @ 0.5 ml/l for its management.

Whitefly on Gerbera

- For the management of whitefly on gerbera spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease scenario

Fruit Crops:

Grape

- Rust infection needs constant attention on var. Bangalore blue and other coloured varieties (Krishna, Sharadseedless).. It could be managed with the application of of Chlorothalonil (0.2%) or Bitertanol (0.2%) or Propiconazole (0.1%) or Azoxystrobin (0.1%). Lower surface of the leaves on the vines to be sprayed properly. Powdery mildew may infect grapevines for which sprays of Azoxystrobin (0.125%)/ Diniconazole (0.2%)/ Fenarimol (0.05%)/ Hexaconazole (0.1%) are recommended.

Mango

- Leaf spot (*P. mangiferae* /*C. gloeosporioides*) may be noticed on the new flush. Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) or Zineb + Hexaconazole (0.2%) along with the sticker @ 0.5ml/L advisable.

Papaya

- Black leaf and fruit spots (*Asperisporium cariceae*) and anthracnose (*C. gloeosporioides*) are attaining serious proportions. Application of Thiophanate methyl (0.1%) or Antracol (0.2%) or Zineb + Hexaconazole (0.2%) along with sticker @ 0.5 ml/L are recommended. Lower surface of the leaves to be sprayed properly.

Pomegranate

- Leaf and fruit spot disease caused by *Puedocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides)* may become serious. These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.

Guava

- Canker (*Pestalotiopsis psidi*) in greenish immature guava fruits and styler end rot (*Phomopsis psidi*) and anthracnose (*C. gloeosporioides)* in mature fruits may be noticed. Application of Zineb (0.3%) or Ziride (0.4%) followed with Carbendazim (0.1%) or Thiophanate methyl (0.1%)/ along with sticker (0.5 ml /l) is effective for disease management.

Banana

- Moderate Intensity of Sigatoka leaf spot (*Mycospheralla* sp) may be recorded. For controlling Sigatoka application of Tridemorph (0.1%) or Propiconazole (0.1%) or Chlorothalonil (0.2%) is recommended whereas crown rot and anthracnose could be effectively managed by the pre-harvest sprays with Carbendazim (0.1%) or Thiophanate methyl (0.1%) followed by post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Vegetable Crops:

In solanaceous (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.)

- Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 1st to 15th October, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature(^{0}C)		Relative Humidity(%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
October 1st to 15th, 2016	30.0 **(29.2)**	22.0 **(19.7)**	73.0 **(78.0)**	51.0 **(51.5)**	4.0 **(3.8)**	3.0 **(3.8)**	15.0 **(108.6)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th October, 2016

During the first fortnight of the month i.e., from October 1st to 15th, 2016, the average maximum and minimum temperatures were higher by 4.8^{0}C and 0.3^{0}C respectively, as compared to the previous fortnight. The average maximum and minimum temperature were lower by 0.6^{0}C each, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and evening were lower by 7.5%, and 3.5% respectively, as compared to the previous fortnight. There was 15.0mm rainfall during the fortnight.

Crop weather situation

- The rainfall received during the period was very low and the temperatures are relatively higher. Protective irrigations have to be given for both fruit crops and vegetable crops. Mulching may be provided to reduce evaporation losses as well as ambience temperatures. Wherever sufficient irrigation is there field preparation and application of manures and fertilizers may be done for planting of *rabi* vegetables. Split dose of N, P_2O_5 and K_2O @ 200 g/tree may be given for papaya planted during kharif. The weather was suitable for the cultivation of Oyster Mushroom (*Pleurotus spp*.) and Shiitake mushroom (*Lentinula edodes*) with additional humidity requirement. Milky mushroom was slow to grow both during spawn running and cropping. In ornamental crops, increase incidence of sucking pests like leaf minor and white flies especially in polyhouse.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango shoot borer

- Clip and destroy affected shoots.

- Spray acephate 50 WP@ 1.5 g/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae.*

Webber and ash weevil on Mango

- Incidence of webber and ash weevil become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos @ 2 ml/l or lamda cyhalothrin @ 1ml /l for their management.

Fruit sucking moth on Pomegranate

- Wherever matured fruits are there fruit sucking moth damage is expected. Netting the orchards is recommended.

Grapes

- Thrips, Scirtothrips dorsalis is expected to occur on leaves of newly pruned Bangalore Blue. Spray fipronil @ 1.5ml/L.

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Tomato moth

- Install tuta pheromone traps for monitoring of the adults @ 4-6 traps/acre.
- Spray indoxacarb @ 0.75 ml/L or spinosad @ 0.3ml/L.

Tobacco caterpillar on Tomato

- For the management of this pest, spray indoxacarb @ 0.75 ml/L or thiodicarb @ 1 g/L.

Leaf hopper on okra/Bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 1 %, thoroughly covering lower surface of leaves.

Thrips on rose

- Incidence of rose thrips was observed more under polyhouse conditions. Spray acepthate @ 1 g/l or imidacloprid @ 0.5 ml/l for its management.

Whitefly on Gerbera

- For the management of whitefly on gerbera spray dichlorvos @ 1 ml/l followed by methomyl 40 SP @ 2 g/l. Install yellow sticky traps coated with adhesive or sticky glue at crop canopy level for monitoring adult whitefly population.

Disease scenario

Fruit Crops:

Grapes

- After forward pruning buds on the grapevines should be protected against the infection of downy mildew by the application of 0.8 g Dimethomorph + 2.00 g Macozeb /L or Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%). Rust needs to be taken care in grape vine orchards (var Bangalore Blue). It could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l. Lower surface of the leaves on the vines to be sprayed properly.

Mango

- Intensity of Leaf spot (*P. mangiferae* / *C. gloeosporioides*) may increase. Application of Zineb (0.2%) / Chlorothalonil (0.2%) or Mancozeb (0.2%) along with the sticker @ 0.5ml/L advisable. Infection of Sooty mould should also be taken care for which application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended.

Banana

- Intensity of Sigatoka leaf spot (*Mycospheralla* sp) may be moderate. For controlling Sigatoka application of Tridemorph (0.1%)/ or Chlorothalonil (0.2%) is recommended. Moderate infection of Leaf (*Dieghtonella* spp.), and fruit spots (*Macrophoma* spp.) may be noticed that could be effectively managed by the pre-harvest sprays with Zineb + Hexaconazole (0.2%) or Thiophanate methyl (0.1%).

Pomegranate

- On fresh foliage and emerging flower buds infection of anthracnose might be noticed whereas Leaf and fruit spot disease caused by*Puedocercospora punicae* may become serious These could be managed by spraying Chlorothalonil (0.2%)/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l.
- Since rainfall is less spread of bacterial blight will be less. However spray of copper oxy chloride at 0.2% or Bordeaux mixture at 1% along with Bactrinol 100 (0.5g/l) at monthly interval will help in reducing the disease and spread.

Vegetable Crops:

- In solanaceous (tomato, capsicum, chilli) and cucurbitaceous vegetables (pumpkin, cucumber, ridge gourd etc.) Powdery mildew may appear with cool and dry weather. Hexaconazole at 0.2% spray with 0.5ml sticker/l will reduce the spread and severity. For Alternaria leaf spot chlorothalanil or dithane M 45 at 0.2% spray as preventive measure will reduce the disease incidence.

Ornamental Crops:

Rose

- Black spot incidence can be avoided using contact fungicides like mancozeb or chlorothalanil at 0.2%. In cases of severe infection spray of trifloxystrobin + tebuconazole at 0.1% at 15 days interval will reduce the disease incidence

Chrysanthemum

- In Chrysanthemum, rust due to Puccinia horiana can be avoided by spraying chlorothalonil at 0.2% from October onwards at 15 days interval. The disease severity will increase with cool and dry weather expected from now onwards.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
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Period: 16th to 31st October, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
October 16th to 31st, 2016	26.0 **(29.4)**	19.0 **(19.9)**	58.0 **(81.2)**	38.0 **(53.5)**	5.0 **(4.2)**	2.0 **(3.8)**	0.0 **(70.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st October, 2016

During the second fortnight of the month i.e., from October 16th to 31st, 2016, the average maximum and minimum temperatures were lower by 4.0^{0}C and 3.0^{0}C respectively, as compared to the previous fortnight. The average maximum and minimum temperature were higher by 0.2^{0}C each, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and evening were lower by 15%, and 13% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

- The period remained dry without rains. Relative humidity was also low. Crops in bearing stage specially vegetables require regular irrigation. It is suggested to avoid nitrogen application to restrict vegetative growth. Mulching may be practiced with available material. A foliar spray of 2% SOP and 50 ppm boron may be given to standing crop.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango shoot borer

- Clip and destroy affected shoots.
- Spray indoxacarb 14.5 SC@ 0.75ml/l or Quinalphos 25 EC @ 2ml/l at the time of emergence of new flush. This will also take care of leaf eating weevil, *Rhynchaenus mangiferae*

Webber and ash weevil on Mango

- Incidence of webber and ash weevil become serious on new leaves. Remove webbed leaves wherever possible and burn them. Spray quinalphos 25EC @ 2 ml/l or lamda cyhalothrin @ 1ml /l for their management.

Fruit sucking moth on Pomegranate

- Wherever matured fruits are there fruit sucking moth damage is expected. Netting the orchards is recommended.

Grapes

- Thrips, *Scirtothrips dorsalis* is expected to occur on leaves of newly pruned Bangalore Blue. Spray fipronil @ 1.5ml/L or Metarhizium formulations.

Fruit fly on cucurbits

- For the management of fruit fly on cucurbits, following integrated approach may be followed. Deployment of cue lure traps @ 10 traps/acre + Sanitation (complete destruction of infested fruits at each harvest) + Bait spray (Deltamethrin 0.1 % + jaggery @ 10g/L) at 10 days interval from the date of flowering.

Tobacco caterpillar on Tomato

- For the management of this pest, spray indoxacarb @ 0.75 ml/L or thiodicarb @ 1 g/L.

Leaf hopper on okra/Bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 0.5 %, thoroughly covering lower surface of leaves.

Thrips on rose

- Incidence of rose thrips was observed more under polyhouse conditions. Spray acepthate @ 1 g/l or imidacloprid @ 0.5 ml/l for its management.

Disease scenario

Fruit Crops:

Grapes

- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Mango

- Sooty mould should be taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).
- Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Intensity of Sigatoka leaf spot (Mycospheralla sp.), crown rot (Fusarium moniliforme & Botryodiplodia theobromae) and anthracnose (Colletotrichum musae) of fruits may be increased compared to last fortnight. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown

rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post-harvest dip in Chlorine water (300 ppm) for 10 minutes.

- Macrophoma spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) is recommended for managing the same.

Pomegranate

- Intensity of leaf and fruit spot disease caused by Pseudocercospora punicae and anthracnose of fruit and leaf (C. gloeosporioides) may remain moderate. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control. This will avoid spread of scab disease also. Regular spray of copper oxychloride (0.2%) or Bordeaux mixture (1%) along with streptocycline 0.5g/l is to be continued to avoid spread of nodal blight.

Vegetable Crops:

Leaf blight of tomato and potato by *Phytophthora infestans*

- Since the rain fall is less spread of late blight will not be a problem. However if rain fall is there preventive spray of chlorothalonil or copper oxy chloride at 0.2% is recommended. In case of severe infection, spray of fenamidone + dithane M 45 (Sectin) at 0.1% is recommended.

Powdery mildew in solanaceous vegetable crops

- Spray of wettable sulphur or dithane M 45 after the appearance of the powdery mildew symptoms. In case of severe infection hexaconazole at 0.1% is recommended.

Ornamental crops:

- Incidence of rose powdery mildew is expected to increase. In case of severe infection hexaconazole 0.1% or azoxystrobin 0.1% will reduce the disease spread.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
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Period: 1st to 15th November, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
November 1st to 15th, 2016	26.0 **(28.2)**	20.0 **(19.0)**	64.0 **(80.4)**	40.0 **(51.1)**	4.0 **(3.6)**	2.0 **(3.8)**	9.0 **(61.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th November, 2016

During the first fortnight of the month i.e., from November 1st to 15th, 2016, the average maximum temperature remains the same whereas average minimum temperature was higher by 1.0^{0}C respectively, as compared to the previous fortnight. The average maximum and minimum temperature were lower by 1.2^{0}C and 0.9^{0}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and evening were higher by 6.0%, and 2.0% respectively, as compared to the previous fortnight. There was 9.0mm rainfall during the fortnight.

Crop weather situation

As there was very less rainfall during the last fortnight, supplemental, protective irrigation has to be given for already transplanted rabi vegetables and rabi nursery if any. Spray of vegetable special may be given to provide required nutrition for the vegetables. In fruit crops, mulching with dry leaves in the basins may be given to reduce evaporation losses. Prevailing weather induced flowering in pomegranate after bahar treatment. Early flowering was observed in many mango varieties such as Alphonso, Totapuri, Arka Aruna, Arka Puneet and Raspuri (about 50, 25, 60, 75 and 40% flowering respectively) especially in young trees of less than of 20 years of age. Moisture stress symptoms like reduced leaf area development observed in young shoots of fig variety Poona.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Mango leaf eating caterpillars and weevils

- Spray quinalphos 25EC@ 2 ml/l or lambda cyhalothrin @ 1ml /l for their management.

Caterpillar pests on tomato

- During this period, incidence of both tobacco caterpillar and fruit borer is more. For the management of these caterpillar pests spray indoxacarb 14.5 SC @ 0.75ml/l. Collect and destroy Spodoptera litura at early instar stage, when they feed gregariously, is desirable.

Grape thrips

- Thrips, Scirtothrips dorsalis is expected to occur on leaves of newly pruned Bangalore Blue. Spraying of imidacloprid @0.3ml.L or thiamethoxam 25G @ 0.25g/L is recommended.

Mite on tomato

- Incidence of spider mites is noticed in some tomato fields. For mites management spray spiromesifen 1ml/l.

Thrips on capsicum and chilli

- Incidence of thrips is increasing on capsicum grown under shade net/polyhouses and chilli grown under open conditions. Spray imidacloprid 200 SL @ 0.5 mL/L or fipronil @ 1.5ml/L.

Aphid on rose

- Aphid infestation may increase on rose in open field. Spray Dimethoate @ 2 ml/l for its management. If the incidence is severe, spray thiamethoxam 25 WG 0.3g/L.

Jassids on bhendi

- Incidence of jassids is observed on okra. Spray imidacloprid @ 0.3 ml/l, if the crop is at pre-flowering stage. Otherwise, spray neem or pongamia soaps @ 0.5 %, thoroughly covering lower surface of leaves.

Epilachna beetle on brinjal

- Heavy incidence of epilachna beetle damage is seen on brinjal. Azadirachtin 0.03 % WSP (300 ppm) 5.0 g/l or Quinalphos 20 % AF 1.7 ml/l or Triazophos 40 % EC 2.5 ml/l.

Disease scenario

Disease forecast based on weather parameters during the first fortnight of November 2016

Fruit Crops

Grape

- Intensity of Downy mildew and anthracnose may increase. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph (0.8%) + Mancozeb (0.2%) and for anthracnose spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Mango

- Sooty mould should be taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).
- Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Intensity of Sigatoka leaf spot (Mycospheralla sp.), crown rot (Fusarium moniliforme & Botryodiplodia theobromae) and anthracnose (Colletotrichum musae) of fruits may be increased compared to last fortnight. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post-harvest dip in Chlorine water (300 ppm) for 10 minutes.
- Macrophoma spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) is recommended for managing the same.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (C. gloeosporioides) may remain moderate. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control. This will avoid spread of scab disease also. Regular spray of copper oxychloride (0.2%) or Bordeaux mixture (1%) along with streptocycline 0.5g/l is to be continued to avoid spread of nodal blight.

Vegetable Crops

Powdery mildew in solanaceous vegetable crops

- Spray of wettable sulphur or dithane M 45 after the appearance of the powdery mildew symptoms. In case of severe infection hexaconazole at 0.1% is recommended.

Viral Diseases in solanaceous vegetable crops

- Due to dry weather without rain and increased day temperature during the last fort night, the possibility of increase incidence of thrips is expected. To prevent the damage due to tospo virus production of seedlings using net to cover them, use of neem based formulations and safe chemicals can be used to manage the thrips.

CROP WEATHER SITUATION
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Period: 16th to 30th November, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

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	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
November 16th to 30th, 2016	27.0 **(27.4)**	18.0 **(16.9)**	64.0 **(79.7)**	28.0 **(51.0)**	4.0 **(3.5)**	2.0 **(3.6)**	0.0 **(29.0)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 30th November, 2016

During the second fortnight of the month i.e., from November 16th to 30th, 2016, the average maximum temperature was higher by 1.0^{0}C while average minimum temperature was lower by 2.0^{0}C, as compared to the previous fortnight. The average maximum and minimum temperatures were lower by 0.8^{0}C and 2.1^{0}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning remains the same but during evening it was lower by 12% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

As there was no rainfall during the second fortnight of November also, hence protected irrigation may be given to all the rabi vegetables. Mulching may be provided in basins of fruit crops. The weather was suitable for the cultivation of Oyster Mushroom (*Pleurotus* spp.) and Shiitake mushroom (*Lentinula edodes*) with additional humidity requirement. Milky mushroom was slow to grow both during spawn running and cropping.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers on Mango

- Wherever early flowering is observed, leafhoppers incidence is expected. Spray Azadirachtin 10000 ppm @ 3 ml/L, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.3 ml/l or lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. This will also take care of thrips. Addition of sticker is essential.

Thrips on Grapes

- Thrips, *Scirtothrips dorsalis* is expected to occur on leaves of newly pruned Bangalore Blue. Spraying of imidachloprid @0.3ml.L or thiamethoxam 25G @ 0.25g/L is recommended**.**

Caterpillar pests on tomato

- With the prevailing weather, incidence of various caterpillar pests like tobacco caterpillar and tomato fruit borer may increase on tomato. For the management of both these caterpillar pests, spray indoxacarb 14.5 SC @ 1ml/l.

Aphids on brinjal & bhendi

- Incidence of aphids is increasing on brinjal and bhendi. If the crop is at preflowering stage, spray acephate 1 g/l or imidacloprid 0.3 ml/l. After the fruit set, spray neem or pongamia soaps @ 0.5 % or pulverized neem seed powder extract (NSPE) 4%, by covering the lower surface of the leaves thoroughly.

Mites on tomato

- During the period, incidence of mites is observed in different tomato fields. Spray dicofol @ 2.5 ml/l for their management.

Aphids on rose and beans

- Aphid infestation may increase on rose and other bean vegetables. Spray Dimethoate @ 2 ml/l for their management

***Helicoperpa* on China aster**

- Incidence of *Helicoverpa* may increase on china asters. Spray indoxacarb 14.5 EC @ 1 ml/l for its management.

Disease scenario

Disease forecast based on weather parameters during the second fortnight of November 2016.

Fruit crops

Grapes

- Downy mildew and anthracnose needs to be monitored. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph (0.8%) + Mancozeb (0.2%) and for anthracnose spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Mango

- Powdery mildew requires attention. At this point of time application of wettablesuphur (0.2%) along with sticker @ 0.5 ml/L is recommended.Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Sigatoka leaf spot (*Mycospheralla* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodiatheobromae*) and anthracnose (*Colletotrichum musae*) of fruits require proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the

pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

- *Macrophoma* spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) is recommended for managing the same.

Papaya

- Infection of Black spot (*Asperisporium caricae*) is increasing.Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

Solanaceous and cucurbits vegetables

- Powdery mildew requires attention. At this point of time application of wettablesuphur (0.2%) along with sticker @ 0.5 ml/L is recommended.
- Leafspots and Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Ornamental crops

Chrysnthemum

- This is the time for rust and spraying Chlorothalonil (2g/l) or mycoblutanol (2g/l) as contact fungicide will reduce the incidence. In severe cases, propiconazole (1.5 ml/l) will help in preventing the further spread of the disease.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 1st to 15th December, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
December 1st to 15th, 2016	26.0 **(26.8)**	18.0 **(17.1)**	77.0 **(80.3)**	50.0 **(53.6)**	3.0 **(3.9)**	3.0 **(3.0)**	62.0 **(1.6)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 1st to 15th December, 2016

During the first fortnight of the month i.e., from December 1st to 15th, 2016, the average maximum temperature was lower by 1.0^{0}C whereas average minimum temperature remains same, as compared to the previous fortnight. The average maximum temperature was lower by 0.6^{0}C whereas average minimum temperature was higher by 0.2^{0}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and evening were higher by 0.6%, and 2.6% respectively, as compared to the previous fortnight. There was 62.0mm rainfall during the fortnight.

Crop weather situation

Except rainfall, no major differences were found in other weather parameters compared to last 5 years average values. Higher rainfall recorded during the first fortnight of December 2016 was because of Vardah cyclone. Vegetable farmers may undertake spray of vegetable special. If pollination is completed mango farmers are advised to take up spray of mango special. The weather was suitable for the cultivation of Oyster Mushroom (Pleurotus spp.) and Shiitake mushroom (Lentinula edodes) with additional humidity requirement. Milky mushroom was slow to grow both during spawn running and cropping.

Incidence of pests and diseases

Under the prevailing weather situation, following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers on Mango

- Wherever flowering started, incidence of hoppers is expected to occur on mango. Spray Azadirachtin 3000 ppm @ 2 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.25 ml/l. If blossom webber is noticed, spray lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. Add stickers for enhancing the efficacy. Also direct the sprays to the trunks to check hibernating adults of stone weevils and hoppers.

Cabbage Diamond back moth

- Occurring in severe form. Spraying of neem soap (10g/L) followed by spinosad (0.3ml/L) will be effective.

Tomato fruit borer

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray HaNPV @ 250 LE/ha during evening hours or spray indoxacarb @ 0.75ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam @ 0.3 g/l for their management.

Aphids on cucurbits

- Aphid infestation may increase on different cucurbits. Spray imidacloprid @ 0.5 ml/l for their management.

Disease scenario

Disease forecast based on weather parameters during the first fortnight of December, 2016.

Fruit Crops

Grape

- Downy mildew and anthracnose needs to be monitored. For the management of downy mildew application of Metalyxl + Mancozeb (0.2%)/ Al Fosetyl (0.2%)/ Dimethomorph (0.8%) + Mancozeb (0.2%) and for anthracnose spraying with Propineb (0.2%)/ Chlorothalonil (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%) are effective.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Mango

- Powdery mildew requires attention. At this point of time application of wettable suphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Banana

- Sigatoka leaf spot (*Mycospheralla* sp.), crown rot (*Fusarium moniliforme* & *Botryodiplodia theobromae*) and anthracnose (*Colletotrichum musae*) of fruits require proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot and anthracnose could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.
- *Macrophoma* spots may appear on the fruits of Robusta varieties of banana. Application of Carbendazim (0.1%) or Thiophanate methyl (0.1%) is recommended for managing the same.

Pomegranate

- Intensity of leaf and fruit spot disease caused by *Pseudocercospora punicae* and anthracnose of fruit and leaf (*C. gloeosporioides)* may remain moderate. Application of Chlorothalonil (0.2%)

/Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) is increasing. Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

Solanaceous vegetables

- Powdery mildew requires attention. At this point of time application of wettable suphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Leafspots and Anthracnose spots may increase on foliage. Application of Chlorothalonil (0.2%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.

Cucurbits vegetables

- Powdery mildew may become problem. Application of chlorothalonil (0.2%) as preventive spray and tebuconazole (0.1%) at severe stages may help. For the downy mildews spray of ridomil 0.1% will help.

Ornamental crops

Chrysnthemum

- This is the time for rust and spraying chlorothalonil at 2g/l will prevent the disease incidence. While propiconazole at 0.1% will help as curative measure.

Rose

- Powdery mildew of rose in polyhouse as well as filed grown crops will increase. Tebuconazole or hexaconazole or azoxystrobine at 0.1% would reduce the disease severity.

CROP WEATHER SITUATION
METEOROLOGICAL DATA OF
ICAR-INDIAN INSTITUTE OF HORTICULTURAL RESEARCH
HESSARAGHATTA LAKE P.O., BANGALORE – 560 089

Period: 16th to 31st December, 2016

Latitude: $13^0 7^1$ N **Longitude: 77^0 29^1E** **Altitude: 890 M**

Fortnight	Temperature (^{0}C)		Relative Humidity (%)		Evaporation (mm)	Wind speed (km/h)	Total Rainfall (mm)
	Average Max.	Average Min.	Average At 7.30AM	Average at 1.30 PM			
December 16th to 31st, 2016	28.0 **(27.7)**	17.0 **(16.5)**	73.00 **(76.7)**	37.00 **(50.6)**	4.0 **(4.2)**	2.0 **(4.1)**	0.0 **(0.6)**

* Figures in the parentheses indicate the average values during the corresponding period for the previous 5 years

Fortnight from 16th to 31st December, 2016

During the second fortnight of the month i.e., from December 16th to 31st, 2016, the average maximum temperature was higher by 2.0^{0}C while average minimum temperature was lower by 1.0^{0}C, as compared to the previous fortnight. The average maximum temperature was higher by 0.9^{0}C and average minimum temperature was lower by 0.6^{0}C respectively, as compared to the average values of the corresponding period for the previous five years. The percent relative humidity during morning and evening were lower by 3.6% and 3.0% respectively, as compared to the previous fortnight. There was no rainfall during the fortnight.

Crop weather situation

This is the mango flowering period. The weather is dry farmers are advised to undertake foliar spray of mango special after completion of pollination and fruit set. Vegetable crops also to be sprayed with vegetable special. Wherever possible soil surface must be mulched to prevent evaporation of water.

Incidence of pests and diseases

Plant protection measures – prevailing weather conditions

Under the prevailing weather situation, the following pests are expected under Bangalore conditions on various horticultural crops. Various management options for their management are mentioned below.

Hoppers on mango:

- Wherever flowering started, incidence of hoppers is expected to occur on mango. Spray Azadirachtin 3000 ppm @ 2 ml/l, if the hopper population is low to moderate. If the number exceeds 4 per panicle spray with imidacloprid 200 SL @ 0.25 ml/l. If blossom webber is noticed, spray lambda cyhalothrin 5 EC @ 0.5 ml/l at early panicle emergence. Add stickers for enhancing the efficacy.

Tomato fruit borer:

- With the prevailing weather, incidence of tomato fruit borer may increase on tomato. For its management, spray *Ha*NPV @ 250 LE/ha during evening hours or spray indoxacarb @ 1ml/l, if the incidence is very high. Proper waiting periods are to be followed before harvest of tomatoes.

Midge on chillies:

- Severe incidence of midges is observed on chilli which causes maximum damage at flowering stage. Spray thiamethoxam @ 0.3 g/l for their management.

Thrips on capsicum and chilli:

- Incidence of thrips is increasing on capsicum grown under shade net/polyhouses and chilli grown under open conditions. Spray imidacloprid 200 SL @ 0.5 mL/L or fipronil 5 SC @ 1.5 ml/litre.

Aphids on cucurbits:

- Aphid infestation may increase on different cucurbits. Spray imidacloprid @ 0.5 ml/l for their management.

Disease Scenario

Disease forecast based on weather parameters during the second fortnight of November 2016.

Fruit crops

Grape

- Anthracnose and Powdery mildew infection are supposed to increase may be noticed. For anthracnose application of Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) or thiophanate methyl (0.1%) whereas for powdery mildew Application of Myclobutanil (0.1%) or Triadimefon (0.1%) along with sticker @ 0.5 ml/ l is recommended for the management of disease.
- Rust might continue to be noticed in grape vine orchards (var Bangalore Blue) and could be managed by the treatment with Chlorothalonil (0.2%) or Bitertanol (0.2%) or Dinocap (0.3%) + Mancozeb (2%) along with sticker @ 0.5 ml/ l.

Banana

- Sigatoka leaf spot (Mycospheralla sp.), crown rot (Fusarium moniliforme & Botryodiplodia theobromae) and anthracnose (Colletotrichum musae) Macrophoma fruit spot disease needs proper attention. Sigatoka could be managed by spraying Carbendazim (0.1%) or Thiophanate methyl (0.1%) or Tridemorph (0.1%)/ whereas crown rot, anthracnose and Macrophoma fruit spot disease (Specially on var. Grand Naine) could be controlled by the pre-harvest sprays involving Carbendazim (0.1%) or Thiophanate methyl (0.1%), besides post harvest dip in Chlorine water (300 ppm) for 10 minutes.

Mango

- Powdery mildew requires attention. At this point of time application of wettable suphur (0.2%) along with sticker @ 0.5 ml/L is recommended. Anthracnose spots might further increase on foliage. Application of Chlorothalonil (0.2%) or Thiophanate methyl (0.2%) or Carbendazim (0.1%) along with sticker (@ 0.5 ml / L) is recommended for the disease management.
- Sooty mould should be still taken care. Application of Copper oxychloride (0.3%) along with sticker (@ 0.5 ml / L) is recommended. Further hopper and other insect management is important with suitable insecticides (Imidacloprid @ 0.5%).

Pomegranate

- Intensity of leaf and fruit spot disease and anthracnose of fruit and leaf may increase further. Application of Chlorothalonil (0.2%) /Antracol (0.2%)/ Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l is effective for the disease control.

Papaya

- Infection of Black spot (*Asperisporium caricae*) may further increase. Whereas powdery mildew (*Oidium caricae*) infection may also be noticed Application of Chlorothalonil (0.2%) Carbendazim (0.1%)/ Thiophanate methyl (0.1%)/ Hexaconazole (0.1%) along with the sticker @ 0.5ml/l with good coverage of the lower surface of the foliage is recommended.

Vegetable crops

Crucifers

Powdery mildew

- Spray wettable sulphur or tebuconazole at 0.2% at the beginning of the infection with sticker at 0.5ml per l of spray liquid with good coverage of the lower surface o the leaves.

Tomato

Powdery mildew

- Spray hexaconazole or tebuconazole 0.2% at the begging of the infection with sticker as mentioned earlier

Medicinal Crops

Betel vine

Powdery mildew

- Spray wettable sulphur at 0.2%. spray of systemic fungicides not recommended. Maintenance of good aeration and proper drainage are important.

Ornamental Crops

Rose

Powdery mildew

- Spray with azoxystrobin at 0.05% with sticker as mentioned above.

Black spot

- Spray mancozeb 0.2% at the initial stages and trifloxystrobin or propiconazole (0.1%) if infection is severe at later stages.